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Biometric relationships to estimate length and weight of *Leucoraja naevus*, *Raja montagui* and *Raja clavata* from wings landings in Cantabrian Sea.

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INTRODUCTION

The scarce elasmobranch information existing nowadays has received rapidly growing world-wide attention in targeted fisheries, and also as a by-catch in other fisheries. The landings of rays are significant as by-catch in the North of Spain fisheries, and not always individuals are landed whole (Figure 1). The ray wings are cut on board of commercial vessels, and this landing are recorded by fish-markets. One of the objectives of DELASS project (Development of Elasmobranch Assessments) is to obtain reliable data into a particular area. To know the round fresh weight and landing length distributions, in this poster we present the degree of existent correlation among certain dimensional characteristics.

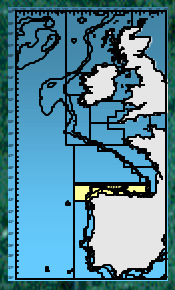


Figure 2. Study area

MATERIAL AND METHODS

Data was obtained from biological samplings carried out in the IEO of Santander, during the first year of the project DELASS (July 2000 - July 2001). The samples were obtained monthly in the species *Raja clavata*, *Raja montagui* and *Leucoraja naevus*, although the data are only used for annual relationship. These species were selected because they suppose more than 90% of the market landings in ICES Subdivision VIIIc (Figure 2). The other small percentage of commercial landings of Rajidae is compound mainly for *Raja brachiura*, *Raja undulata* and *Raja microocellata*. Material was collected by commercial trawlers and in some case in research vessels surveys.
Parameters obtained by individual (Figure 3) were: Total Length, LT; diameter of the disc, dL; length of the wing, wL; total weigh and weight of the wing.
The measurements are always to the lowest centimetre for lengths and to the nearest gramme for weights.

Figure 1. Commercial pieces (wings and disc).

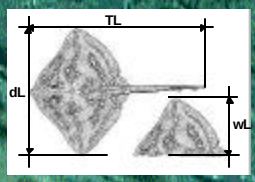
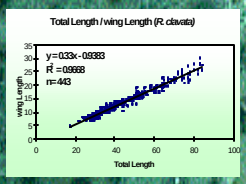
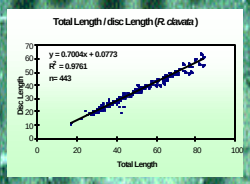
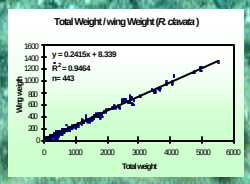
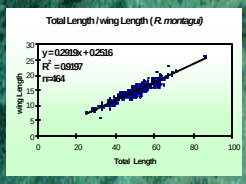


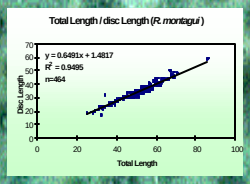
Figure 3. Measurements in Rajidae

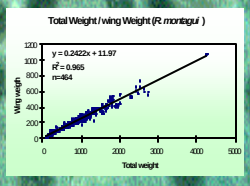


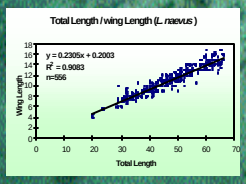


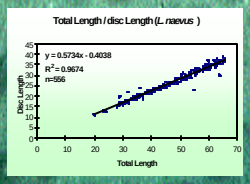












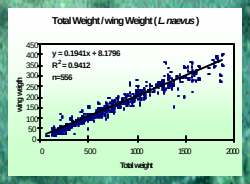


Figure 4. Regressions obtained

RESULTS

The length range analysed covered the commercial size distribution of these ray species, while small sizes were completed with individuals from research surveys. For each target species strong correlation among the measures compared (total length-wing length, total length-disc length and total weight-wing weight) has been found. Plots of these relationships are shown (Figure 4) with r² values always over 0.9 ($p<0.05$).

These results provide real estimates of total weight and length distributions of Rajidae species landings from ICES Subdivision VIIIc.

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